PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 30 AUG 2005
WIPO PCT

Applicant's or agent's file reference DC5116PCT1	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/US2004/007873	International filing date *(day/month/year)* 16.03.2004	Priority date *(day/month/year)* 03.04.2003
International Patent Classification (IPC) or national classification and IPC C08G77/26, C08G77/18, C08K5/07, C08K5/54, C08L83/04		
Applicant DOW CORNING CORPORATION et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 3 sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
01.11.2004	29.08.2005
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Kolitz, R Telephone No. +49 89 2399-8481

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US2004/007873

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

   Description, Pages

   1-27 as originally filed

   Claims, Numbers

   1-15 received on 04.11.2004 with letter of 04.11.2004

   ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US2004/007873

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-15
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-15
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re item V:
Reasoned statement with regard to novelty and inventive step and industrial applicability, Article 33 (2) to (4) PCT:

D1: EP-A-0586184
D2: EP-A-0802222

1. The present application (claims 1-11) relates to a moisture curable composition comprising
a) an organopolysiloxane terminated with hydroxy or hydrolysable groups H
b) a silane having independently of each other two R1 groups wherein R1 is alkyl. alkenyl, alkynyl, aryl or fluorinated alkyl; and two G groups reactive with the H groups, the group G being selected from alkoxy, acetoxy, oxime and hydroxy;
c) filler(s)
d) a photocatalyst
whereby either b) comprises alkenyl or alkynyl (**embodiment I**) or b) does not comprise alkenyl or alkynyl (**embodiment II**).
According to **embodiment II** the composition comprises further
e) an unsaturated compound selected from unsaturated short chain siloxane, unsaturated cyclic siloxane, unsaturated fatty acid, ester or alcohol.

The present application (claims 12 and 13) relates further to an elastomeric product comprising the moisture cured composition and a cured sealant consisting it.
The present application (claims 14 and 15) relates to its use as a sealant and a method of forming an elastomeric mass between surfaces.

2. The subject-matter of claims 1-15 is novel in the sense of Art. 33 (2) PCT:

2.1. Embodiment I is novel over D1, example 1, Table 2, Formulations 9, 11, 12 and 13, because the moisture curable compositions disclosed therein do not comprise component b) as defined in amended claim 1 wherein the group G is alkoxy, acetoxy, oxime and hydroxy.

2.2. Embodiment II is novel vis-à-vis D2, example 1, sample No.6 and example 2, samples No.12 and 13, because the polydiorganosiloxane mixture disclosed therein

does not comprise component e) of present claim 1 it does not comprise an unsaturated short chain siloxane. According to the applicant the silicone-organic copolymer having one alkoxysilyl terminal and one vinyl terminal in the first formula in example 1 of D2 is not a unsaturated short chain siloxane according to the definition of e).

3. The present application meets also the requirements of Article 33 (3) PCT because the subject-matter of claims 1-15 is inventive.

The problem underlying the present application may be regarded as to provide further moisture curable compositions which exhibit a reduced surface friction (expressed in the present examples as drag force in grams).

No indication is given in the prior art that the specific moisture curable composition as defined in the present claims can be used to solve this problem.

None of the documents of the search report discloses or suggests such a moisture curable composition or an elastomeric product or sealant comprising it.

Therefore the presence of an inventive step can be acknowledged for the subject-matter of claims 1-15 vis- à- vis the documents of the search report.

4. The present application meets the requirements of Article 33 (4) PCT because the subject-matter of claims 1-15 is also industrially applicable.

5. The description is not adapted to the present claims.

CLAIMS

1. A moisture curable composition capable of cure to an elastomeric body, the composition comprising

a) An organopolysiloxane having not less than two silicon-bonded hydroxyl or hydrolysable groups;

b) A silane substantially having the formula $G_2 - Si - R^1_2$, wherein each group G is the same or different and is selected from the group consisting of alkoxy, acetoxy, oxime, and hydroxy groups, and each R^1 independently represents an alkyl group having from 1 to 10 carbon atoms, an alkenyl group, an alkynyl group an aryl group such as phenyl, or a fluorinated alkyl group;

c) one or more fillers and

d) a photocatalyst;

wherein, when no R^1 group is either an alkenyl or alkynyl group there is provided:-

e) an unsaturated compound selected from the group of an unsaturated short chain siloxane, an unsaturated cyclic siloxane, an unsaturated fatty acid, an unsaturated fatty alcohol and an unsaturated fatty acid ester.

2. A composition in accordance with claim 1 wherein component (b) comprises one or more alkenyl alkyl dialkoxysilanes, alkenylalkyldioximosilanes, alkenylalkyldiacetoxysilanes, and/or alkenylalkyldihydroxysilanes.

3. A composition in accordance with claim 1 or 2 wherein component (b) is selected from the group vinyl methyl dimethoxysilane, vinyl ethyldimethoxysilane, vinyl methyldiethoxysilane, vinylethyldiethoxysilane, vinyl methyl dioximosilane, vinyl ethyldioximosilane, vinyl methyldioximosilane, vinylethyldioximosilane, vinyl methyl diacetoxysilane, vinyl ethyldiacetoxysilane, vinyl methyldiacetoxysilane, vinylethyldiacetoxysilane, vinyl methyl dihydroxysilane, vinyl ethyldihydroxysilane, vinyl methyldihydroxysilane and vinylethyldihydroxysilane.

4. A composition in accordance with any preceding claim wherein component (c) comprises one or more of fumed silica, calcined silica, precipitated silica, titania, zinc oxide, clay, mica, ground calcium carbonate, precipitated calcium carbonate, magnesium carbonate, quartz, diatomaceous earth, barium sulphate, and calcium sulphate.

5. A composition in accordance with claim 4 wherein component (c) comprises a fatty acid treated precipitated calcium carbonate.

6. A composition in accordance with any preceding claim wherein the photocatalyst (component (d)) is a titanate.

7. A composition in accordance with claim 6 wherein the titanate has the general formula $Ti[OR^5]_4$ where each R^5 may be the same or different and represents a monovalent, primary, secondary or tertiary aliphatic hydrocarbon group which may be linear or branched containing from 1 to 10 carbon atoms.

8. A composition in accordance with claim 7 wherein R^5 may be selected from the group of methyl, ethyl, propyl, isopropyl, butyl, tertiary butyl and 2,4-dimethyl-3-pentyl.

9. A moisture curable composition in accordance with any preceding claim wherein component (a) is a linear or substantially linear polydiorganosiloxane having terminal groups selected from $-Si(R^2)_2OH$, and $-Si(R^2)_2-(D)_d-R^3-SiR^2_k(OR^4)_{3-k}$; where D is $-R^3-(Si(R^2)_2-O)_r-Si(R^2)_2-$, R^2 is selected from an alkyl group having from 1 to 6 carbon atoms, a vinyl group, a phenyl group and a fluorinated alkyl group, R^3 is a divalent hydrocarbon group r is a whole number between 1 and 6 and d is 0 or a whole number, R^4 is an alkyl or oxyalkyl group in which the alkyl groups have up to 6 carbon atoms and k has the value 0, 1 or 2.

10. A composition in accordance with any preceding claim wherein component (e) comprises an unsaturated organopolysiloxane having a degree of polymerization from

2 to 50 and at least two silicon bonded functional groups, which are reactable with the hydroxy or hydrolysable groups of component (a).

11. A composition in accordance with any preceding claim comprising:
100 parts by weight of component (a)
from 2 to 22 parts by weight of component (b),
from 40 to 180 parts by weight of component (c), and
from 0.3 to 6 parts by weight of component (d).

12. An elastomeric product comprising the moisture cured composition in accordance with any one of claims 1 to 11.

13. A cured sealant consisting of the elastomeric product in accordance with claim 12 having an air-sealant interface surface with a maximum gloss value of 45.

14. Use of a composition in accordance with any one of claims 1 to 11 as a sealant.

15. A method of forming an elastomeric mass between surfaces which is adherent to at least two such surfaces which method comprises introducing between the surfaces a mass of a moisture curable composition in accordance with any one of claims 1 to 11 and curing the composition in the presence of moisture.

Box No. VIII (ii) **DECLARATION: ENTITLEMENT TO APPLY FOR AND BE GRANTED A PATENT**

The declaration must conform to the standardized wording provided for in Section 212; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (ii). If this Box is not used, this sheet should not be included in the request.

Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4.17(ii) and 51*bis*.1(a)(ii)), in a case where the declaration under Rule 4.17(iv) is not appropriate:

in relation to this international application,

DOW CORNING CORPORATION is entitled to apply for and be granted a patent by the virture of the following:

DOW CORNING CORPORATION is entitled as employer of the inventors,

BEGER, Andrew of 2801 Dawn Road, Midland, Michigan 48642, US;
LUEDER, Timothy of 2425 North Hope Road, Midland, Michigan 48642-7922, and
SUBRAMANIAM, Nagambal of 2612 Abbott Road, G7, Midland, Michigan 48642.

This declaration is made for the purposes for all designations.

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (ii)".